**Quick Tips for Determining the Pattern of Inheritance (POI) Shown in a Pedigree**

AP Biology, Mrs. Krouse

**Sex Ratio** (proportion of affected males and females)

* If a pedigree shows nearly even amounts of males and females displaying a trait, it is probably an autosomal trait.
* If pedigree shows significantly more males displaying a trait, it is probably an X-linked recessive trait.
* If a pedigree shows only males displaying a trait, it is probably a Y-linked trait.
* X-linked dominant traits are the wild card. They may or may not show an even sex ratio of affected individuals. On the AP test, it is actually pretty rare to see a pedigree that shows the inheritance of an X-linked dominant trait.

**Skipping Generations**

* If a pedigree shows that the trait is present in all generations, it is probably a dominant trait (either autosomal dominant or X-linked dominant).
* If a pedigree shows that the trait “skips” generations (i.e. the trait not present in two parents, but is present in some of their children), it is probably a recessive trait.
* For a Y-linked trait, a son must have the trait if his father has the trait and vice versa.

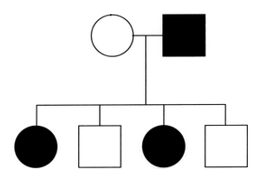
**Specific Pedigree Examples to Help You Narrow Down the POI**

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| ***#*** | ***If you see this in the pedigree…*** | ***The pedigree COULD show this/these pattern(s) of inheritance*** | ***The pedigree does NOT show this/these pattern(s) of inheritance*** |
| 1 |  | Autosomal Recessive | Autosomal Dominant  X-Linked Recessive  X-Linked Dominant  Y-Linked |
| 2 |  | Autosomal Recessive  X-Linked Recessive | Autosomal Dominant  X-Linked Dominant  Y-Linked |
| 3 |  | Autosomal Dominant | Autosomal Recessive  X-Linked Recessive  X-Linked Dominant  Y-Linked |
| 4 |  | Autosomal Dominant  X-Linked Dominant | Autosomal Recessive  X-Linked Recessive  Y-Linked |

* If you see #2 but not #1 (from the chart given above), look for the sex ratio to determine if the trait is autosomal recessive or X-linked recessive. If the sex ratio shows only slightly more males displaying the trait, you can also look for these two trends, which are commonly seen with X-linked recessive traits.

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| --- | --- |
| Explanation: Neither parent shows the trait, and only sons show the trait (typically half the sons).  *(Note: The mother must be a carrier of the X-linked recessive trait.)* | Explanation: Only the mother shows the trait, and all the sons (but no daughters) show the trait. |

* If you see #4 but not #3 and you are unsure whether the trait is autosomal dominant or X-linked dominant, you can also look for the following trend, which is commonly seen with X-linked dominant traits.



Explanation: Only the father shows the trait, and all the daughters (but no sons) show the trait.